



# ZOO\*4170 Experimental Comparative Animal Physiology - DRAFT

Winter 2022

Section(s): C01

Department of Integrative Biology

Credit Weight: 0.50

Version 1.00 - December 09, 2021

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## 1 Course Details

### 1.1 Calendar Description

In this course an experimental approach to the study of physiological mechanisms and adaptive responses to changes in the environment will be stressed. The focus of the course will be on laboratory exercises.

**Pre-Requisites:** 1 of BIOM\*3200, HK\*2810, ZOO\*3210, ZOO\*3600

### 1.2 Course Description

In this course an experimental approach to the study of physiological mechanisms and adaptive responses to changes in the environment will be the primary topics. The focus of the course will be on physiological data, quantitative skills and scientific communication skills. The data necessary for analysis and communication of findings will either be obtained by the students in labs or measured at home by the students. The lecture portion will focus on human biological rhythms, acquisition and analysis of rhythmic data, and the development and refinement of scientific communication skills. The laboratory portion will focus on experimental animal physiology, data analysis, and scientific communication skills.

### 1.3 Timetable

• Lectures:

Tue/Thu 10:00 – 11:20 AM in MCKN 116

- Laboratories:

Section 101: Wednesday 2:30-5:20 PM in SSC 3305

Section 102: Thursday 2:30-5:20 PM in SSC 3305

## 1.4 Final Exam

There is no final exam in this course.

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## 2 Instructional Support

### 2.1 Instructional Support Team

**Instructor:** Dr. Frédéric Laberge  
**Email:** flaberge@uoguelph.ca  
**Telephone:** +1-519-824-4120 x56238  
**Office:** SSC 1465

**Lab Co-ordinator:** Dr. Colin DeMill  
**Email:** cdemill@uoguelph.ca  
**Telephone:** +1-519-824-4120 x56557  
**Office:** SSC 3313

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## 3 Learning Resources

There is no textbook. Students are required to read articles from the primary literature.

Descriptions of lab exercises will be available as PDF documents through Courselink.

### 3.1 Required Resources

#### Courselink (Website)

<https://courselink.uoguelph.ca>

This course will make use of the University of Guelph's course website on D2L (via Courselink). Consequently, you are responsible for all information posted on the

Courselink page for ZOO\*4170. Please check it regularly.

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## 4 Learning Outcomes

### 4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Develop a research hypothesis and test a prediction(s) based on the hypothesis.
  2. Analyze physiological data with statistics using a problem-based approach.
  3. Practice and demonstrate advanced oral presentation skills by developing an individual presentation.
  4. Practice and demonstrate advanced written communication skills in reports of your findings.
  5. Produce graphical representations of data in multiple formats and select appropriate formats for effective data presentation.
  6. Practice and demonstrate use of bioinformatics in support of the design of molecular physiology experiments.
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## 5 Teaching and Learning Activities

### 5.1 Lectures

The focus of the lectures will be on human biological rhythms and scientific communication skills. First, students will be asked to measure physiological variables on themselves over consecutive days to contribute data that will be used by the class. Second, using class data, each student will propose and evaluate an original hypothesis by testing one or more predictions related to their hypothesis. The proposed hypotheses will be presented in class as a narrated or live presentation midway through the course, while the findings will be described in an individual final written report.

### 5.2 Laboratories

Eight experiments will be conducted investigating various physiological mechanisms. Labs are completed by groups of up to three students. **Participation in laboratory sessions is mandatory.** Attendance and participation in each lab is required to get credit for the lab report. No alternate assignments will be accepted for any of the lab exercises. Photos and videos in the lab are prohibited unless directly related to lab activities. This course involves participation in laboratory exercises that use animals.

### 5.3 Schedule

<b>CLASS SCHEDULE</b>	<b>WHAT IS DUE</b>	<b>LAB SCHEDULE</b>
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<b>Jan</b>	11-13	Course introduction, Intro to biological rhythms				
	18-20	Autorhythm Project – Background, Methods & Data analysis	Lab Reports are due one week after lab session	<b>Jan</b>	19-20	Intro
	25-27	Skills: Figures and stats , Skills: Oral presentations		<b>Jan</b>	26-27	Labs 1-6 on rotation
<b>Feb</b>	1-3	Skills: Writing style, Skills: Library resources	Autorhythm Data (Feb 4)	Feb	2-3	Labs 1-6
	8-10	Discussion of class data, Details of presentation	Presentation schedule – decided in class	<b>Feb</b>	9-10	Labs 1-6
	15-17			<b>Feb</b>	16-17	Labs 1-6
	22-24	NO CLASS – WINTER BREAK				
<b>Mar</b>	1-3	Student Presentations		Mar	2-3	Labs 1-6
	9-10	Student Presentations		Mar	9-10	Labs 1-6
	15-17	Student Presentations		Mar	16-17	Labs 7-9
	22-24	Student Presentations		<b>Mar</b>	23-24	Labs 7-9
	29-31			<b>Mar</b>	31-Apr 1	Labs 7-9

Apr	5-7		Authorhythm Report (Apr. 4)			

## 6 Assessments

### 6.1 Marking Schemes & Distributions

- A. Lab assessments (Labs 1-6, 8: 5%; Lab 7, 8%; Lab notebook, 7%)
- B. Student presentation (15%) & questions (5%)
- C. Autorhythm report (30%)

### 6.2 Assessment Details

#### A. Lab assessments (50%)

Group lab reports consisting of analyzed results and an abbreviated discussion will be submitted each week before the next lab session. An individual lab notebook will also be maintained and submitted at the end of the semester.

#### B. Student presentation & questions (20%)

Each student will produce a presentation describing their hypothesis and predictions on the topic of human physiological rhythms. Depending on student numbers, 10 min presentations will be used in class (low numbers) or a narrated 5 min presentation will be presented online (high numbers). The hypothesis to be tested must relate to the data gathered by the class (and classes from previous years). The instructions for the presentation, criteria for evaluation, and schedule of talks will be posted on the ZOO\*4170 CourseLink website. Each presentation will be followed by a brief discussion period (< 5 min) where students are expected to actively participate and contribute. To encourage participation and questions, for each presentation, randomly selected students will be assigned the task of asking one question and completing a peer-review form that will be used by the instructor to help grade the presentation.

#### C. Autorhythm report (30%)

The autorhythm report is done as an individual report with title page, introduction (2 pages max., double-spaced), methods, results, discussion (4 pages max.), and references cited. The introduction should give a general review of the topic and lead up to and end with your hypotheses and predictions. The methods section should be very brief (unless the methods deviated from those given in the instructions) and should state how the data was analyzed, i.e. a section on statistical analysis must be included. **Results form the main part of this report.** Include graphs of your results with the fitted curve, where relevant, and other graphs

that summarize your findings – be original. Give a summary table and/or figures of the class results. Give a clear interpretation of the data. What do the results say? What conclusions can be drawn from the data? In your discussion section, you must consider the following questions: How do the results relate to observations in the literature? What are the limitations of your results? What are the conclusions?

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## 7 Course Statements

### 7.1 Late Policy

Assignments and lab reports submitted after the deadline will accrue a penalty of 3% per day.

### 7.2 Absence & Illness

- When an assignment is missed, you must notify the instructor in writing, with your name, ID number, and e-mail contact as soon as possible. If requesting academic consideration on medical or compassionate grounds, be prepared to provide supporting documentation.
- See the undergraduate calendar for information on regulations and procedures for Academic

Consideration: <http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

### 7.3 Lab Assignments

Students are required to write all assignments in their own words. Ensure that you paraphrase correctly from the published literature. If you have any questions or concerns about paraphrasing, please ask course instructors for help. Students are encouraged to discuss course materials together, but ensure that you do not collaborate on written assignments in a manner that could be perceived as copying. As well, do not copy from lab reports submitted in this course in earlier years, as this is a form of academic misconduct.

## 8 Department of Integrative Biology Statements

### 8.1 Academic Advisors

If you are concerned about any aspect of your academic program:

- Make an appointment with a program counsellor in your degree program. [B.Sc. Academic Advising](#) or [Program Counsellors](#)

### 8.2 Academic Support

If you are struggling to succeed academically:

- Learning Commons: There are numerous academic resources offered by the Learning Commons including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist. <http://www.learningcommons.uoguelph.ca/>
- Science Commons: Located in the library, the Science Commons provides support for physics, mathematic/statistics, and chemistry. Details on their hours of operations can be found at: <http://www.lib.uoguelph.ca/get-assistance/studying/chemistry-physics-help> and <http://www.lib.uoguelph.ca/get-assistance/studying/math-stats-help>

### 8.3 Wellness

If you are struggling with personal or health issues:

- Counselling services offers individualized appointments to help students work through personal struggles that may be impacting their academic performance. <https://www.uoguelph.ca/counselling/>
- Student Health Services is located on campus and is available to provide medical attention. <https://www.uoguelph.ca/studenthealthservices/clinic>
- For support related to stress and anxiety, besides Health Services and Counselling Services, Kathy Somers runs training workshops and one-on-one sessions related to stress management and high performance situations. <http://www.selfregulationskills.ca/>

### 8.4 Personal information

Personal information is collected under the authority of the University of Guelph Act (1964), and in accordance with Ontario's Freedom of Information and Protection of Privacy Act (FIPPA) <http://www.e-laws.gov.on.ca/index.html>. This information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes.

For more information regarding the Collection, Use and Disclosure of Personal Information policies please see the Undergraduate Calendar. (<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/intro/index.shtml>)

### 8.5 Course Offering Information Disclaimer

Please note that course delivery format (face-to-face vs online) is subject to change up to the first-class day depending on requirements placed on the University and its employees by

public health bodies, and local, provincial and federal governments. Any changes to course format prior to the first class will be posted on WebAdvisor/Student Planning as they become available.

## 9 University Statements

### 9.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

### 9.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

### 9.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

### 9.4 Copies of Out-of-class Assignments



Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

## 9.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to make a booking at least 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

For Guelph students, information can be found on the SAS website  
<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website  
<https://www.ridgetownc.com/services/accessibilityservices.cfm>

## 9.6 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community—faculty, staff, and students—to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct  
<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

## 9.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

## 9.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars

<https://www.uoguelph.ca/academics/calendars>

## 9.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

## 9.10 Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g.. final exam or major assignment).

## 9.11 Covid-19 Safety Protocols

For information on current safety protocols, follow these links:

- <https://news.uoguelph.ca/return-to-campus/how-u-of-g-is-preparing-for-your-safe-return/>
- <https://news.uoguelph.ca/return-to-campus/spaces/#ClassroomSpaces>

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.

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